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10/590,573

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Terrence L. Blevins

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EXAMINER

SHECHTMAN, SEAN P

ART UNIT

PAPER NUMBER

2121

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,573	Applicant(s) BLEVINS ET AL.	
	Examiner Sean P. Shechtman	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/22/07; 2/14/07</u> . | 6) <input checked="" type="checkbox"/> Other: <u>IDS filed 10/9/07</u> . |

DETAILED ACTION

1. Claims 1-20 are presented for examination.

Specification

2. The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Claim Objections

3. Claims 11, 17 are objected to because of the following informalities: Referring to claim 11, line 17, "a expert module parameters" should be "expert module parameters". Referring to claim 17, line 11, "a expert module parameters" should be "expert module parameters". Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-4, 6-10, are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Although the claims are directed to a system comprising a module and database, the module and database could reasonably be interpreted by one of ordinary skill in the art, in light of the instant specification (page 15, paragraph 33, pages 19-20, paragraph 39, page 44, paragraph 80, pages 56-57, paragraph 104, pages 83-84, paragraph 164, of the instant specification), to be software, such that the system comprising the module and database is software, per se. Computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program’s functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program’s functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-8, 17-20, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pub. No. 2002/0022894 to Eryurek et al, hereinafter referred to as Eryurek, supplied by applicant (whole document).

Referring to claim 1, Eryurek teaches a configuration system for configuring a process control system of a process plant (paragraph 15-18), the configuration system comprising:

a configuration database to store a configuration of the process control system (Fig. 2, element 66, Fig. 3; paragraphs 29, 46, 50, 56);

a process module stored in the configuration database, the process module comprising a plurality of process objects, each process object representing a corresponding physical entity in the process plant, the process module representing a logical unit in the process plant (Figs. 1, 3; paragraphs 3, 25, 29, 30, 56); and

a set of expert rules stored in the configuration database, the set of expert rules associated with the process module and adapted to be applied by an expert engine to detect at least one abnormal situation associated with the logical unit, the set of expert rules referencing information exposed by the process module (Fig. 2, paragraphs 45-49).

17. A method to facilitate monitoring a process control system of a process plant (paragraph 2), the method comprising:

configuring a process module, the process module comprising a plurality of interconnected process objects, each process object representing a corresponding

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physical entity in the process plant, the process module representing a logical unit in the process plant (Figs. 1, 3; paragraphs 3, 25, 29, 30, 56);

configuring an expert module, the expert module including a set of expert rules associated with the process module and adapted to be applied by an expert engine to detect at least one abnormal situation associated with the logical unit, the set of expert rules referencing parameter data of the process module, the expert module including a expert module parameters associated with evaluation of the expert rules (Fig. 2, paragraphs 15-18, 45-49);

configuring a process graphic, the process graphic adapted to provide on a user interface a graphical depiction of the logical unit, parameter data of the process module, and parameter data of the expert module (Fig. 3; paragraph 29);

storing the configured process module, the configured expert module, and the configured process graphic to a configuration database, the configuration database to store a configuration of the process control system (Fig. 2, element 66, Fig. 3; paragraphs 29, 46, 50, 56); and

downloading the configured process module, the configured expert module, and the configured process graphic to a workstation in the process plant (Fig. 2, element 14), the workstation adapted to implement an execution engine to execute the process module, to display the process graphic on a user interface, and to implement the expert engine during operation of the process (Fig. 2, paragraphs 45-49).

2. A configuration system according to claim 1, wherein the process module comprises the set of expert rules (Fig. 2, paragraphs 30, 45-49).

4. A configuration system according to claim 1, further comprising an execution engine communicatively coupled to the configuration database, the execution engine configured to execute the process module and to apply the set of expert rules during operation of the process plant (Fig. 2, paragraphs 45-49).

5. A configuration system according to claim 4, further comprising a workstation having a processor and a computer readable memory, the workstation communicatively coupled to the configuration database; wherein the process module and the set of expert rules are stored in the computer readable memory; wherein the computer readable memory has stored therein programming instructions to configure the processor to implement the execution engine (Fig. 2, paragraphs 45-49).

6. A configuration system according to claim 1, wherein the expert rules are configured to cause at least some alerts of the process module to be disabled if a set of facts are detected by an expert engine (paragraphs 30-31, 45-49).

7. A configuration system according to claim 1, wherein the expert rules are configured to cause at least one alert to be generated if a set of facts are detected by an expert engine (paragraphs 30-31, 45-49).

8. A configuration system according to claim 1, further comprising a process graphic stored in the configuration database, the process graphic comprising a graphical representation depicting the logical unit and adapted to be displayed on a display device during execution of the process module, wherein the process graphic is configured to depict information provided by an expert engine applying the set of expert rules during operation of a process (Fig. 3; paragraph 29).

18. A method according to claim 17, further comprising generating an alert in an alert system of the process control system using the expert engine during operation of the process (paragraph 54-57).

19. A method according to claim 17, further comprising disabling a group of alarms associated with at least one of the process module or the expert module using the expert engine during operation of the process (paragraph 54-57).

20. A method according to claim 17, further comprising permitting an operator to modify the set of expert rules via the workstation during operation of the process (Fig. 2, paragraphs 45-49).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eryurek in view of U.S. Pat. No. 6,445,963 to Blevins et al, hereinafter referred to as Blevins, supplied by applicant (whole document). Claims 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eryurek, as applied to claims 1, 2, 4-8, 17-20 above, and further in view of Blevins (whole document).

Referring to claim 11, Eryurek teaches a system for monitoring a process control system of a process plant (paragraph 15-18), the system comprising:

a processor (Fig. 2); a computer readable memory (Fig. 2);

a process module stored in the computer readable memory, the process module comprising a plurality of interconnected process objects, each process object representing a corresponding physical entity in the process plant, the process module representing a logical unit in the process plant, each process object having a parameter memory storage to store parameter data corresponding to the physical entity represented by the process object (Fig. 2, element 66, Fig. 3; paragraphs 29, 46, 50, 56),

an expert module stored in the computer readable memory, the expert module including a set of expert rules associated with the process module and adapted to be applied by an expert engine to detect at least one abnormal situation associated with the logical unit, the set of expert rules referencing parameter data of the process module, the expert module including a expert module parameters associated with evaluation of the expert rules (Fig. 2, paragraphs 15-18, 45-49);

a process graphic stored in the computer readable memory, the process graphic adapted to provide on a user interface a graphical depiction of the logical unit, parameter data of the process module, and parameter data of the expert module (Fig. 3; paragraph 29);

an execution engine stored in the computer readable memory and adapted to be executed by the processor, the execution engine to execute the process module during operation of the process plant and to display on the user interface the graphical depiction of the logical unit, the parameter data of the process module, and the parameter data of the expert module (Fig. 2, paragraphs 45-49); and

an expert engine stored in the computer readable memory and adapted to be executed by the processor, the expert engine to apply the set of expert rules of the expert module (Fig. 2, element 66, Fig. 3; paragraphs 29, 46, 50, 56).

Eryurek teaches the following:

12. A system according to claim 11, wherein the execution engine comprises the expert engine (Fig. 2, paragraphs 30, 45-49).

13. A system according to claim 11, wherein the execution engine is adapted to permit a user, during operation of the process, to select parameters of the expert module for display (Fig. 2, paragraphs 45-49, 54-57).

14. A system according to claim 11, wherein the expert engine is adapted to permit a user, during operation of the process, to modify the set of expert rules (Fig. 2, paragraphs 45-49, 54-57).

15. A system according to claim 11, wherein the expert rules are configured to cause at least some alerts of the process module to be disabled if a set of facts are detected by the expert engine (paragraphs 30-31, 45-49).

16. A system according to claim 11, wherein the expert rules are configured to cause at least one alert to be generated if a set of facts are detected by the expert engine (paragraphs 30-31, 45-49).

Referring to claims 11, 3, Eryurek teaches all of the limitations set forth above, however fails to teach wherein at least some of the process objects of the process module include simulation capabilities to simulate the corresponding physical entities.

However, referring to claims 11, 3, Blevins teaches process modeling used in process control wherein at least some of the process objects of the process module include simulation capabilities to simulate the corresponding physical entities (Col. 4, line 21 – Col. 5, line 34).

Eryurek and Blevins are analogous art because they are from the same field of endeavor, process control.

At time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Eryurek with the process modeling taught by Blevins.

One of ordinary skill in the art would have been motivated to combine these references because Blevins teaches process modeling that enables a user to create an control block or module within a process control routine without having to go off-line, without having to have a lot of knowledge about how the control routine must be

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created, without having to perform a lot of engineering to create waveforms to generate a process model and without having to reprogram a control routine to implement model predictive or other advanced control, thus this saves time, costs and provides use of the created process model for other purposes, such as for simulation and the production of virtual process outputs within the process control environment. Furthermore, Blevins teaches the process modeling enable a user to create advanced control blocks such as MPC control blocks, neural network modeling or control blocks, etc. without having a great deal of expert knowledge about how those blocks are created and enables an operator to create and use an advanced control block without performing a lot of reprogramming of the process to implement advanced control. Furthermore, because Blevins teaches the advanced control block is created using the same programming paradigm as the other control elements within the system, the user can be provided consistent views of the process or graphical displays of the process having the advanced control block therein. Still further, because the process model is needed to be created for, for example, an MPC function block, this process model can be used to produce simulation function blocks which can be used to simulate the process for other purposes such as testing, training, detecting process/process-model mismatch or producing virtual outputs of the process for use in controlling a process (Col. 20, lines 45 – Col. 21, lines 18).

7. Claims 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eryurek, as applied to claims 1, 2, 4-8, 17-20 above, and further in view of U.S. Pub.

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No. 2003/0028269 to Spriggs et al, hereinafter referred to as Spriggs, supplied by applicant (whole document).

Referring to claims 9, 10, Eryurek teaches all of the limitations set forth above, however fails to teach wherein the configuration database includes a library of expert rule templates; wherein the configuration database is adapted to keep track of versions of the set of expert rules.

However, referring to claims 9, 10, Spriggs teaches a configuration database includes a library of expert rule templates (paragraph 251-253); wherein the configuration database is adapted to keep track of versions of the set of expert rules (paragraph 247).

Eryurek and Spriggs are analogous art because they are from the same field of endeavor, plant management.

At time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Eryurek with the database taught by Spriggs.

One of ordinary skill in the art would have been motivated to combine these references because Spriggs teaches an industrial plant asset management system which includes a unified display environment and a common database structure for protecting and managing industrial plant assets. Furthermore, Spriggs teaches an industrial plant asset management system which is modular in design and based on a client server architecture that allows the user to configure the system as centralized, distributed, or any combination of the two. Furthermore, Spriggs teaches an industrial plant asset management system as characterized above which includes Local or Wide

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Area Network (LAN or WAN) support for implementing the system in a manner that takes advantage of existing network structures and philosophy for lowering installation and system maintenance costs. Furthermore, Spriggs teaches an industrial plant asset management system as characterized above which includes remote access to obtain remote services for troubleshooting both instrument and machinery problems for providing expedited problem resolution and lowered cost of services. Furthermore, Spriggs teaches a unified display environment as characterized above which includes a machinery management display that provides a unified interface to machine asset and condition information as well as the system's instrument assets and transducer or sensor assets thereby enabling the user to view the enterprise as a whole and navigate to a specific point or parameter quickly and easily. Furthermore, Spriggs teaches the unified display environment as characterized above which provides access to machinery and instrument asset information, such as drawings and maintenance records or reports. Furthermore, Spriggs teaches the unified display environment as characterized above which reduces user-training time and increases effectiveness as its use becomes more intuitive. Furthermore, Spriggs teaches the unified display environment as characterized above which allows the user to correlate information from multiple applications and sources into a single unified view thereby expediting problem resolution during the diagnostics process. Furthermore, Spriggs teaches an industrial plant asset management system as characterized above which incorporates multiple condition monitoring technologies as well as on-line and off-line data collection. Furthermore, Spriggs teaches an industrial plant asset management system as

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characterized above which includes an open architecture for taking advantage of the many utilities and tools available for today's operating systems, importing and exporting information using industry standard methods, using application components in third-party systems, and customizing the system to specific needs without the need for complex configuration and integration. Furthermore, Spriggs teaches an industrial plant asset management system as characterized above which includes parametric alarming in addition to the traditional software alarms of prior art systems thereby allowing the user to set alarms based on different modes of operation, including process conditions. Furthermore, Spriggs teaches parametric alarming as characterized above, for providing the user with the ability to customize system alarms and create simple or very complex alarming schemes. Furthermore, Spriggs teaches parametric alarming as characterized above, which includes generating internal software alarms for an alarm list, for creating exportable alarms for third-party interfaces, and for initiating data collection for machinery monitored on-line (paragraphs 14-26).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571)272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SPS

Sean P. Shechtman

June 19, 2008

/Sean P. Shechtman/
Primary Examiner, Art Unit 2121